MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

VERY SERIOUS MARINE CASUALTY | REPORT NO 7/2016 | APRIL 2016

Fire and foundering of fishing vessel *Karinya* (FR 699) Moray Firth 4 October 2015

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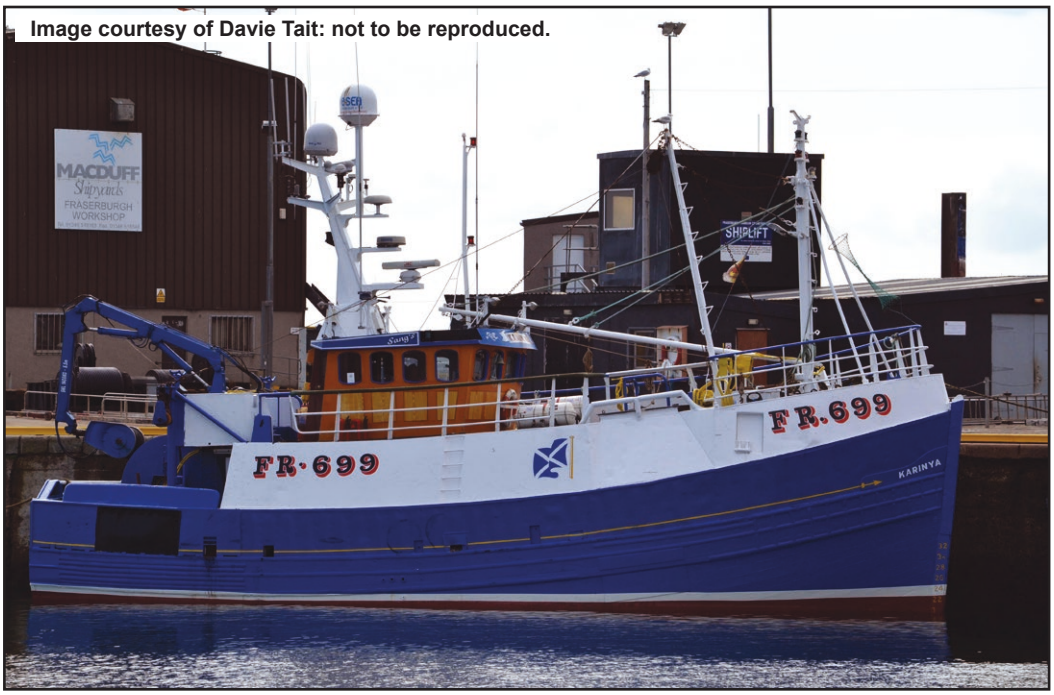
SUMMARY

On 4 October 2015, the 16.35m wooden twin-rig prawn trawler *Karinya,* FR 699, was fishing in the Moray Firth. On board were the vessel's owner/skipper and four crew. At 1305[1], during shooting operations, a fire was discovered on board. The crew launched an inflatable liferaft, evacuated the vessel and were rescued by the crew of another fishing vessel that was nearby. *Karinya* was overwhelmed by the fire and subsequently foundered at 2104.

The MAIB investigation established that the fire probably started in the cabin. Smoke then spread quickly, forcing the skipper and crew to evacuate the vessel rather than to attempt to fight the fire.

Appropriate published guidance already covers many of the identified safety issues, which are reiterated in the MAIB safety flyer accompanying this report. No further recommendations have been made as a result of this investigation.

[1] All times in this report are universal co-ordinated time + 1 hour.



FV *Karinya* (FR 699)

FACTUAL INFORMATION

Background

Karinya had been owned and operated by its skipper for 5 years. The vessel was based at Fraserburgh and usually went to sea for 4 to 5-day trips.

The wheelhouse was accessed from the galley area via an internal stairway. Adjacent to the galley was the mess area, which led forward to the crew toilet and shower. The single 8-berth cabin was located on the deck below, aft of the engine room and was accessed via an internal stairway from the galley area **(Figure 1)**.

The normal trawling routine was to complete three tows in a 24-hour period: two tows during the day and one longer tow during the hours of darkness.

Events leading up to the fire

During the morning of 2 October 2015, *Karinya'*s crew took on board stores, ice and bunker fuel in preparation for the trip that was expected to last 5 days. Just before noon, the vessel left Fraserburgh to steam 60 miles to the intended fishing grounds.

*Karinya'*s crew fished throughout the following day, but the catch was poor. The skipper spoke to the skipper of another prawn trawler who was fishing different grounds in the Moray Firth. With a worsening weather forecast, *Karinya*'s skipper decided to relocate to these fishing grounds, located 20 miles off Fraserburgh, and *Karinya* arrived there the following morning.

At 0600 on 4 October, the trawl gear was shot away for the first tow of the day. The crew then went to the mess area for breakfast before going to the cabin to rest. The skipper remained alone in the wheelhouse. The weather was fine, with a light breeze and a calm sea.

At 1215, the skipper went below from the wheelhouse to the cabin to wake the crew. It was normal to give the crew 15 minutes' notice prior to hauling, allowing them time for a coffee and a cigarette. By 1230, all four crew were on the aft deck, in position ready to haul the nets.

With the skipper operating the winch controls, located aft of the wheelhouse, each net was recovered in turn and its catch emptied into a pound forward of the wheelhouse. During this operation the skipper entered the wheelhouse a number of times.

The skipper returned to the winch controls at about 1255 and at 1305 *Karinya* was in autopilot, steaming slowly ahead as the crew prepared to shoot the nets. At this time the four crew were on the aft deck, two at each winch drum.

The fire

With the nets in the water, the skipper used the winch controls to allow the nets to stream astern. He then smelled burning, which he likened to the smell of a fan belt slipping. He stopped shooting the nets and entered the wheelhouse, where he heard the vessel's fire alarm sounding. He then descended the internal stairway to the mess deck with the intention of going to the engine room to investigate.

As he reached the bottom of the ladder the skipper saw thick black smoke coming out of the doorway at the top of the stairway leading down to the cabin. He left the stairway, went to the open doorway to the aft deck, and shouted to the crew to collect their lifejackets and to close the doors.

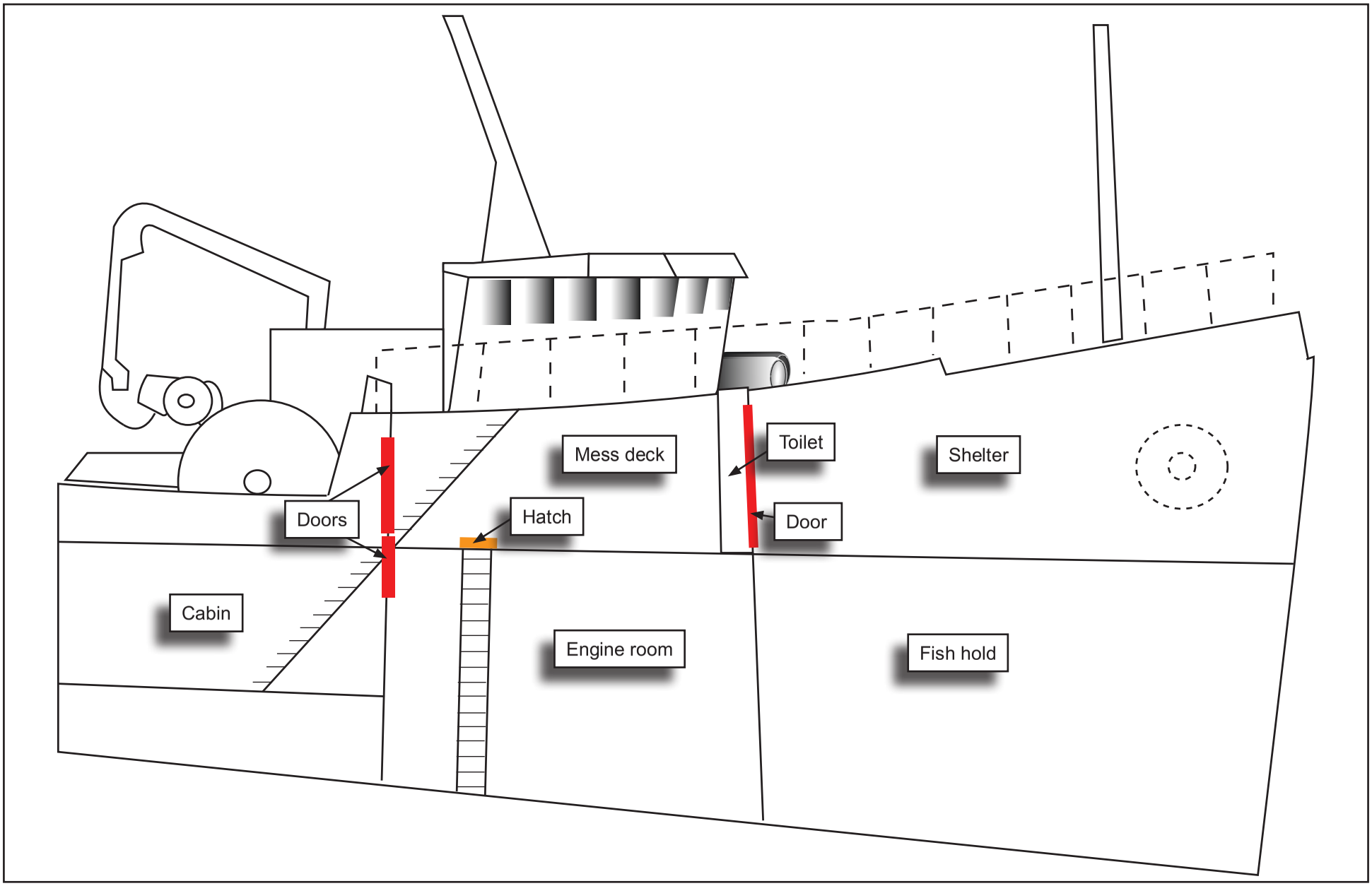


Figure 1: General arrangement

The vessel's abandon ship lifejackets were stored in the cabin, and could not be accessed. Inflatable personal flotation devices (PFD), which the crew wore during fishing operations in poor weather, were kept in a locker on the aft deck. The crew each donned a PFD, and took a spare from the locker for the skipper, who had returned to the winch controls to recover the nets. One of the crew closed the doors from the accommodation to the aft deck and shelter deck. Owing to the volume of smoke emitting from the cabin, no attempt was made to reach into the smoke in order to close the cabin door.

The four crew mustered with the skipper aft of the wheelhouse. Taking a deep breath, the skipper then entered the wheelhouse, which had filled rapidly with smoke. He pulled the throttle lever back to neutral and grabbed a hand-held very high frequency (VHF) radio that he kept by the throttle control. Owing to the smoke, he could not access the vessel's main VHF radio sets or the engine emergency stop.

The abandonment

Using the hand-held VHF radio on Channel 16, the skipper tried to contact *Pleiades*, another prawn trawler that was fishing the same grounds approximately 1 mile away. Receiving no response, he changed to a working VHF radio channel, called *Pleiades* again and received a reply. He then advised *Pleiades'* skipper that *Karinya* was on fire and asked him to raise the alarm.

At 1309, *Pleiades'* skipper broadcast a "Mayday Relay" on VHF Channel 16, to which Aberdeen Coastguard responded immediately.

Karinya's crew deployed a boarding ladder over the vessel's starboard side and then launched and inflated one of the two 6-man inflatable liferafts.

The skipper called *Pleiades'* skipper on VHF radio, advising him that the crew were abandoning to a liferaft. *Pleiades'* skipper responded that he was recovering his gear and would be with them in less than 30 minutes. This was relayed to Aberdeen Coastguard, who had tasked Fraserburgh RNLI[2] all-weather lifeboat (ALB) and coastguard helicopter R951, based at Inverness. The crew of fishing vessel *Beryl,* which was also nearby, advised Aberdeen Coastguard that they would proceed and assist as required.

Karinya's skipper and four crew boarded the liferaft, cut the painter, and paddled clear of the vessel.

At 1338, *Pleiades* came alongside *Karinya*'s liferaft, and recovered everyone on board. Aberdeen Coastguard was advised accordingly.

The foundering

At 1405, coastguard helicopter R951 arrived on scene and a paramedic was lowered onto *Pleiades* to assess *Karinya*'s skipper and crew. All of them were deemed fit and wished to remain on board *Pleiades*. The helicopter used its thermal imaging camera to assess *Karinya* for hot spots and reported back to Aberdeen Coastguard that there was a very hot spot starboard aft, that flames were coming through the shelter deck and that there was intense smoke.

At 1418, Fraserburgh ALB arrived on scene. Its crew then directed a jet of water through one of *Karinya*'s wheelhouse window openings **(Figure 2)**.

Karinya had several gas bottles on board, stored aft of the wheelhouse, and there were an estimated 10,000 litres of bunker fuel on board. Owing to the explosion risk, and that no one was left on board *Karinya*, Fraserburgh ALB was instructed by Aberdeen Coastguard to stop fire-fighting and to maintain a safe distance from the vessel.

[2] Royal National Lifeboat Institution

By 1603, *Karinya*'s wheelhouse had completely melted. By 1709, the entire shelter deck had burned away **(Figure 3)** and, soon afterwards, flames could be seen through the timbers on both sides of the vessel **(Figure 4)**. Bunker fuel was boiling off, venting from the fuel tanks on both sides of *Karinya,* and burning violently **(Figure 5)**.

As the fire spread, a hole developed on *Karinya*'s transom, which gradually increased until sea water began to enter the vessel. At 2104, *Karinya* sank.

Manning

Karinya's skipper was a 48 year-old career fisherman. He held a Skipper Certificate for Under 16.5m Vessels and all of the mandatory UK fishing vessel safety training course certificates.

Three of *Karinya'*s four crew were from the Philippines, with the fourth from Sri Lanka. All of them held the mandatory UK fishing vessel safety training course certificates.

Published guidance

Useful information for fishermen, including appropriate guidance on fire prevention and emergency procedures, is contained in the Maritime and Coastguard Agency's Fishermen's Safety Guide.

ANALYSIS

Summary

Karinya foundered following a fire that probably started in the vessel's cabin. Smoke from the fire was not contained and it forced the skipper and crew to make a rapid abandonment. No attempt was made to fight the fire.

Having alerted the crew of another fishing vessel nearby, *Karinya*'s skipper and crew successfully launched and boarded a liferaft, from which they were later rescued.

Potential fire ignition sources

A forensic fire investigation has not been possible as the vessel foundered in deep water. Consequently, the fire's ignition source has not been determined. However, the following potential ignition sources within the cabin have been identified:

- A lit cigarette
- Spontaneous combustion
- Electrical:
    - Mobile phone charger/battery
    - Electric cabling
    - Electric fan
    - Electric heater

Figures 2 and 3: Accident sequence

Figures 4 and 5: Accident sequence

Lit cigarette

Karinya's skipper and crew all smoked cigarettes. Smoking was permitted anywhere on board with the exception of the cabin and the toilet. However, if the crew were smoking when they needed to enter the cabin for some reason they would not extinguish their cigarette before doing so.

After being woken by the skipper, the crew proceeded from the cabin to the mess area where one or more of them are likely to have smoked a cigarette prior to going onto the aft deck in readiness for hauling the nets.

Cigarette ends were normally discarded into ashtrays. However, it is possible that a poorly discarded cigarette end that was not fully extinguished was left in the cabin, or fell or was blown down the internal stairway and through the open cabin doorway.

Spontaneous combustion

Spontaneous combustion results when a material self-heats to such an extent that ignition occurs. In the cabin there were several black plastic bin bags filled with clothing belonging to *Karinya'*s engineer, who was at home on leave. It is possible that some of his clothing might have had been in contact with oil, thus making it more prone, if not stored appropriately, to spontaneous combustion.

Electrical

The 24-Volt cabin lighting was reported as being fully operational and there had been no recent problems with the lighting circuit.

An armoured 240-Volt cable ran from the galley to the cabin. This cable terminated at a single socket with a four-socket switched extension adaptor plugged into it. A mobile phone charger was plugged into one of the sockets. Prior to leaving the cabin one of the crew plugged the mobile phone charger lead into his mobile phone, which he had purchased with the charger 2 weeks previously.

An electric fan, though present in the cabin, was not turned on at the time of the accident and is therefore not considered a cause of the fire.

An electric heater in the cabin was wired so it operated only when *Karinya* was connected to a shore power supply. The heater could not have been in use at the time of the accident and therefore is also discounted as a cause of the fire.

Probable ignition source

While it is concluded that the electric fan and electric heater were not the fire's source of ignition, a fault in the 240-Volt cable, the 'new' mobile phone charger or the phone itself cannot be dismissed. Similarly, spontaneous combustion of the engineer's clothing stored in black plastic bin bags cannot be dismissed. However, while no conclusive evidence is available, it is considered that the fire probably resulted from a discarded or poorly extinguished cigarette either left in, or allowed to drop into the cabin, where it ignited the ready supply of flammable materials stored there.

Fire loading

Karinya's cabin contained a significant quantity of combustible material. With the exception of the skipper, the crew lived on board *Karinya* for 10 to 12 months. Storage space was limited in the cabin, with the crew's personal effects stored in and around their bunks. All available storage space was utilised.

Spare bedding was stored in black plastic bin liners and stowed along the aft bulkhead in the cabin. The engineer's personal belongings were stowed in black plastic bags on an unused bunk and underneath the stairway to the cabin.

There was a seating area in the cabin, under which the abandon ship lifejackets were stowed together with net-mending materials and spare vinyl seat covering.

The furniture in the cabin was constructed from wood, as were the cabin bulkheads.

Fire detection and alarm system

Karinya was fitted with an automatic fire detection and alarm system that had detector heads in the engine room, galley and cabin. If activated, an audible alarm sounded in the wheelhouse on a panel that also visually indicated the detector's location.

The fire alarm was sounding when the skipper entered the wheelhouse, en route to the engine room to investigate the burning smell. It is not known for how long the alarm had been sounding prior to the skipper smelling the fire and entering the wheelhouse to investigate, but it is unlikely to have been more than 10 minutes.

The purpose of the automatically activated fire alarm was to provide the crew with an early notification of a fire. In this case, the alarm did not provide the intended early notification as the skipper could not hear it from his position at the winch controls. As there was no fixed fire extinguishing system in the cabin, early warning of a fire was essential for the crew to have had the chance of using a portable extinguisher effectively. Had the alarm panel been fitted with a loud sounder, audible at the winch controls, the crew might have been able to extinguish the fire and save the vessel. It should be possible for a member of the crew to hear a fire alarm when activated.

Smoke spread

Smoke spread rapidly from the cabin, engulfing the galley area and rising up the internal stairway to the wheelhouse.

The cabin door, which was protected with a fire-retardant coating, was secured in the open position. The door was kept open at all times, apart from during very rough weather. There was no requirement for the door to be fitted with a self-closing device. A chimney effect existed as the smoke emitted from the cabin rose up the stairway, filling the wheelhouse and exiting the vessel through the open wheelhouse door and an open window.

The smoke spread was so rapid that the skipper felt that there was little option other than to evacuate *Karinya*. The necessity for such action could have been prevented had the vessel operated a closed-door policy or had the cabin door been capable of remote closure.

Lifejackets

Abandon ship lifejackets are required to be stowed in a readily accessible location. *Karinya*'s abandon ship lifejackets were stowed in the cabin, in a storage area underneath the cabin seating. Consequently, due to the fire's location, it was not possible for the crew to access the lifejackets prior to evacuation.

However, *Karinya* had previously been employed on guardship duties, a requirement of which was the carriage of inflatable PFDs. These were stowed in a locker on the aft deck as the crew sometimes used them during poor weather, and fortunately the crew were able to access these instead of the abandon ship lifejackets.

Raising the alarm

It was fortunate that the skipper was able to reach a portable VHF radio in the wheelhouse. The vessel's three fixed VHF radio sets, which were equipped with digital selective calling, could not be accessed due to the volume of smoke in the wheelhouse.

Karinya carried an EPIRB[3], which was mounted on a bracket on the main mast. However, due to the rising smoke it was not possible for the skipper to access it and the EPIRB burned with the vessel.

The operational range of a hand-held radio is considerably less than that of a fixed VHF radio set. Fortunately, *Pleiades* was fishing approximately 1 mile from *Karinya* when the fire was discovered and, thus, was within range to receive the skipper's VHF radio call and to render prompt assistance.

Abandonment

Karinya's skipper and crew abandoned the vessel using one of the two available inflatable 6-man liferafts.

The rapid and controlled evacuation pays testament to the skipper's positive safety regime on board *Karinya*. Regular emergency drills had been carried out and the safety equipment had been maintained and was ready for immediate use, albeit not all of it was accessible in this case.

CONCLUSIONS

- *Karinya* foundered following a fire that almost certainly started in the cabin.
- The fire's ignition source has not been determined. However, it is probable that the fire resulted from a poorly discarded cigarette end that was not fully extinguished and was left in the cabin, or fell or was blown down the internal stairway and through the open cabin door.
- *Karinya*'s cabin contained a lot of combustible material to fuel the fire. This included spare bedding and crew's personal effects, some of which might have been prone to spontaneous combustion.
- The fire alarm did not provide the intended early notification of a fire as it could not be heard from the winch control position aft of the wheelhouse.
- The rapid spread of smoke could have been prevented had the vessel operated a closed-door policy or had the cabin door been capable of remote closure.
- It was not possible for the crew to access the abandon ship lifejackets as they were stowed in the cabin rather than in a readily accessible position on deck.
- It was fortunate that *Pleiades* was fishing in close proximity to be able to receive *Karinya*'s skipper's VHF radio call and to render prompt assistance.
- The rapid and controlled abandonment of *Karinya* demonstrates the benefit of conducting regular emergency drills and ensuring safety equipment is maintained and ready for immediate use.

[3] Emergency Position Indicating Radio Beacon

RECOMMENDATIONS

Appropriate published guidance already covers many of the identified safety issues, which are reiterated in the MAIB safety flyer accompanying this report. Therefore no further recommendations have been made as a result of this investigation.

SHIP PARTICULARS	
Vessel's name	*Karinya*
Flag	UK
Classification society	Not applicable
IMO number/fishing numbers	FR 699
Type	Fishing vessel
Registered owner	Karinya LLP
Manager(s)	Caley Fisheries
Year of build	1982
Construction	Wooden
Length overall	18.26m
Registered length	16.35m
Gross tonnage	120
Minimum safe manning	Not applicable
Authorised cargo	Not applicable
VOYAGE PARTICULARS	
Port of departure	Fraserburgh
Port of arrival	Fraserburgh (intended)
Type of voyage	Commercial fishing
Cargo information	Not applicable
Manning	5
MARINE CASUALTY INFORMATION	
Date and time	4 October 2015, 1305
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	Moray Firth
Place on board	Crew cabin
Injuries/fatalities	None
Damage/environmental impact	Vessel foundered. Approximately 10,000 litres of diesel fuel burned off.
Ship operation	Fishing/shooting nets
Voyage segment	Mid-water
External & internal environment	Fine and sunny. Good visibility. Wind south-east Beaufort Force 2. Swell 0.5m.
Persons on board	5